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2019 National Conference of
Regulatory Attorneys

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NUCLEAR CONTRIBUTIONS



AVOIDS
547.5
MILLION
METRIC TONS OF
CARBON
EMISSIONS
EACH YEAR

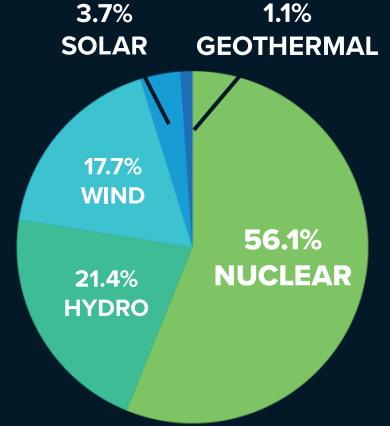


PREVENTS
315,000
SHORT TONS
OF **NOX**

AND


374,000
SHORT TONS
OF **SO₂**
EMISSIONS

—AVERAGE—
CAP FACTOR
>90%
SINCE 1999



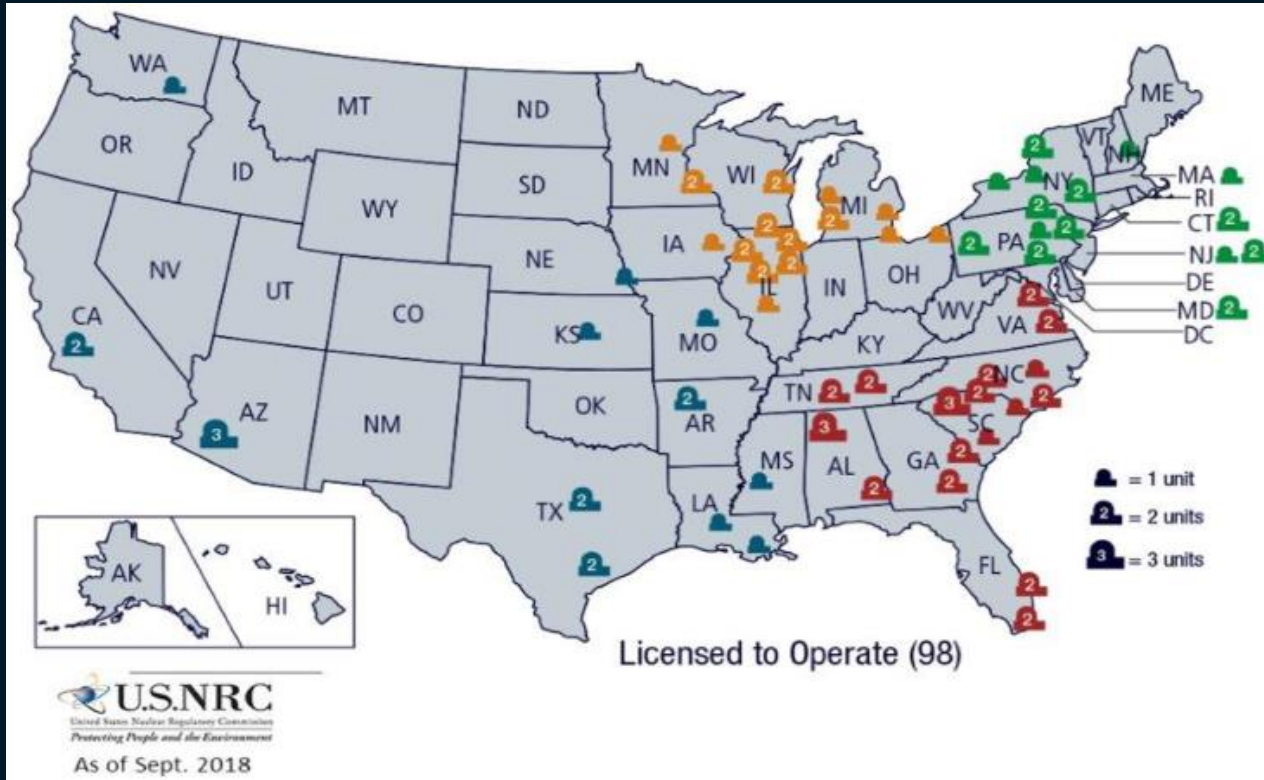
SUPPORTS
475,000
JOBS



SAVES CONSUMERS
AN AVERAGE OF
 **6%**
ON ELECTRICITY BILLS

ADDS
\$60
BILLION
TO THE COUNTRY'S
GDP

Map of U.S. Nuclear Power Reactors

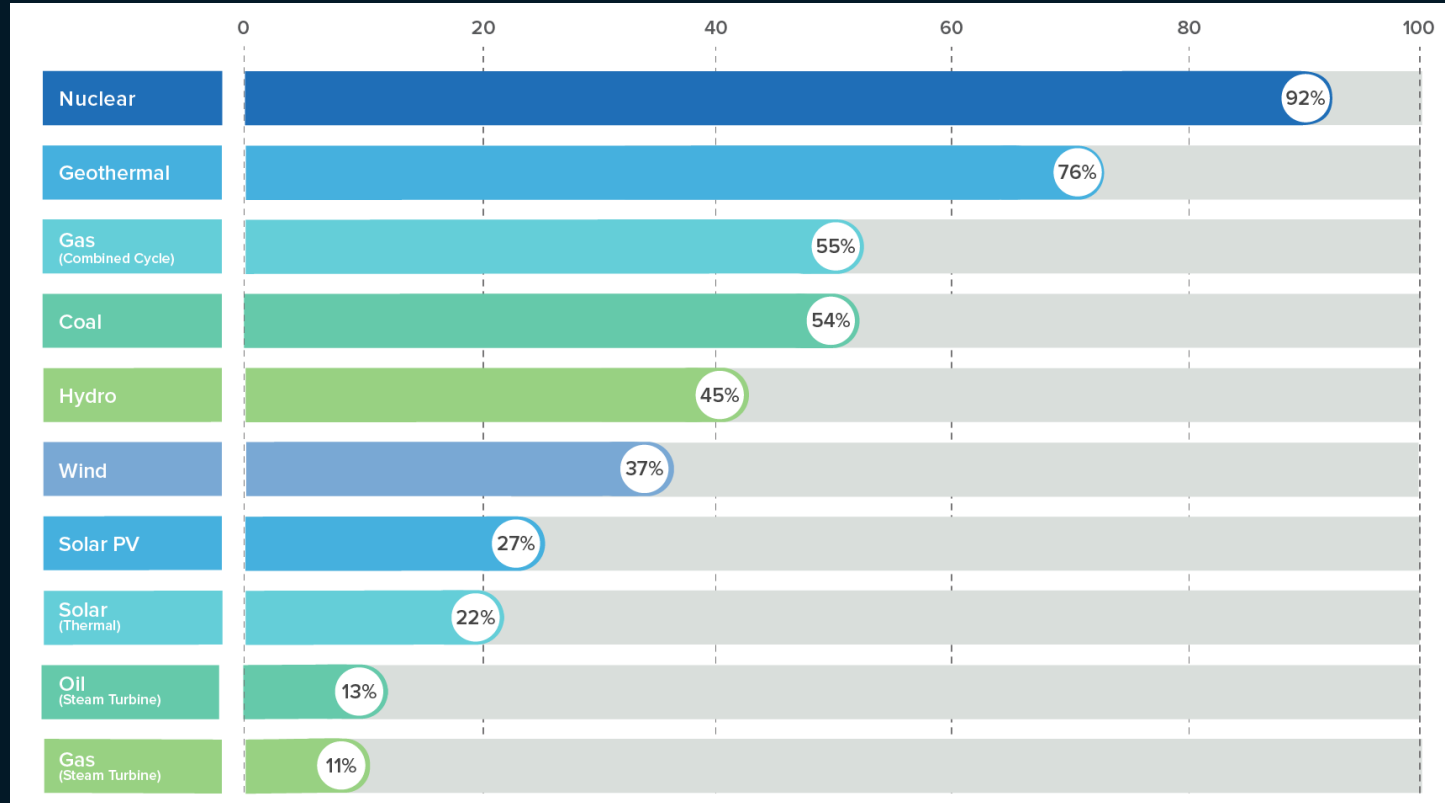


FLEET OPERATION

- **98** reactors at **59** sites in **30** states
- **99,376** MWe of baseload capacity
- **91** reactors granted renewed license
- **807.1** million MWh of production in 2018



CAPACITY BY FUEL TYPE (2017)



UNPRECEDENTED INDUSTRY PERFORMANCE

>90%

Reliability

>90%
Capacity
Factor
Sustained

10x

Safety

10-Fold
Reduction in
Average CDF

Top
Performing

Excellence

Highest
Performance
Record Ever

Best
Ever

Oversight

Fewest
NRC
Performance
Issues Ever

100x

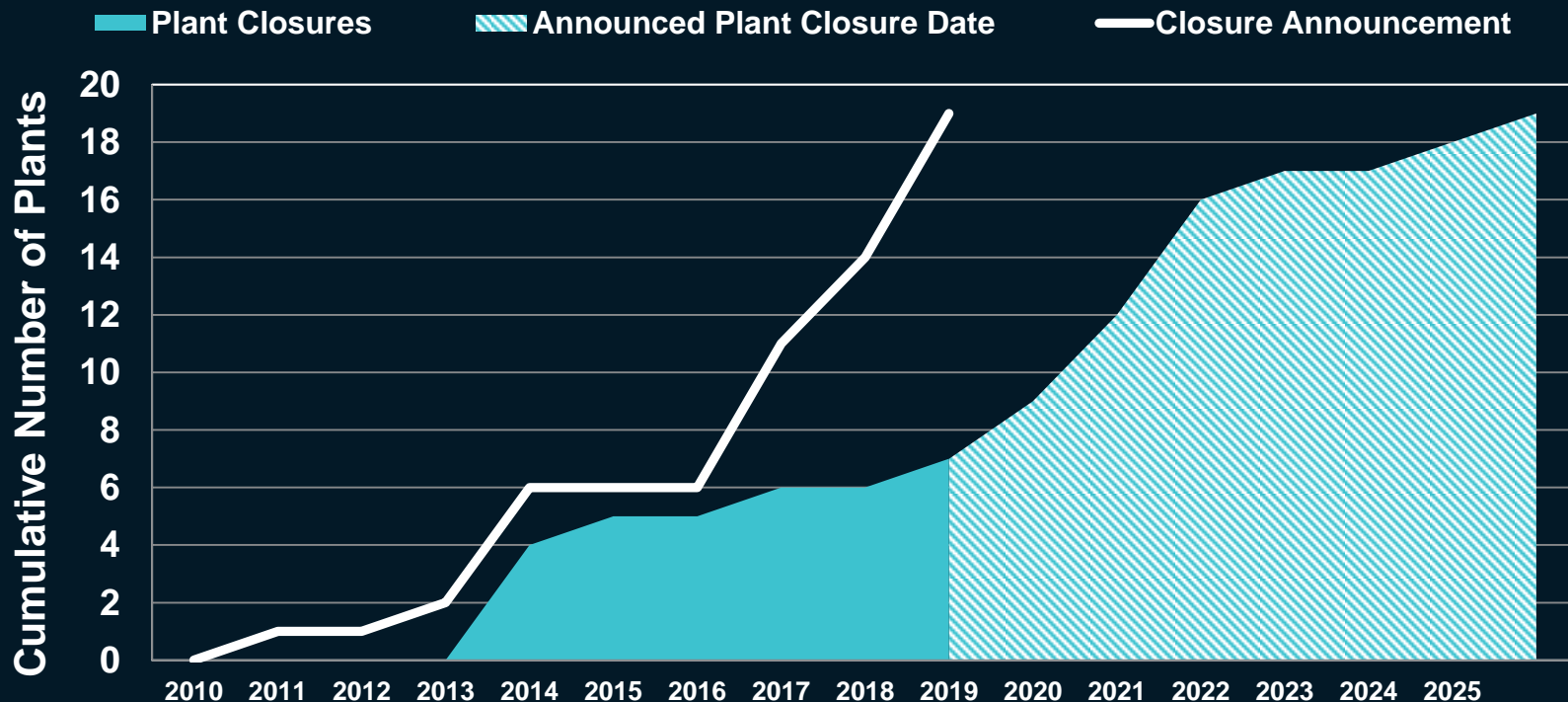
Margin

Fleet
~100 Times
Safer Than
NRC Goals

Exceptional Safety Culture

DECISIONS ARE BEING MADE NOW

Cumulative Plant Closures



STATE ACTION TO PRESERVE OPERATING PLANTS



COURTS AFFIRM ZEC PROGRAMS

- Illinois

- *Electric Power Supply Association v. Star*
(7th Cir., Sept. 13, 2018)

- New York

- *Coalition for Competitive Electricity v. Zibelman*
(2d Cir., Sept. 27, 2018)

PREMATURE PLANT CLOSURES AVOIDED

Plant	MWe	Projected Closure Year	Reason for Potential Shutdown	Electricity Generated in 2017 (billion kWh per year)	CO ₂ Emissions Avoided in 2017 (million metric tons/year)
Clinton	1,065	2017	Market	8.3	8.1
Fitzpatrick	852	2017	Market	6.2	2.9
Ginna	582	2017	Market	4.7	2.2
Hope Creek	1,172	~2020	Market	10.6	7.7
Millstone 2 & 3	2,096	~2020	Market	16.5	7.4
Nine Mile Pt. 1 & 2	1,770	2017-2018	Market	16.0	7.4
Quad Cities 1 & 2	1,819	2018	Market	15.4	11.2
Salem 1 & 2	2,328	~2020-2021	Market	18.0	13.1
TOTAL	11,683			95.7	60.0

- **11,683** Mwe baseload capacity
- More than **7,400** direct jobs saved
- **More** electricity generation **than** all U.S. utility **solar** in 2017
- **60 million** metric tons of CO₂ avoided

STATE LEGISLATION UNDER ACTIVE CONSIDERATION

- Pennsylvania (HB 11/SB 510)
 - Prevents premature closures of TMI, Beaver Valley
- Ohio (HB 6)
 - Establishes clean energy credit program
- Illinois (HB 2861)
 - Assigns responsibility for clean generation capacity to Illinois Power Agency

States Are Starting to Approach Final Target Years

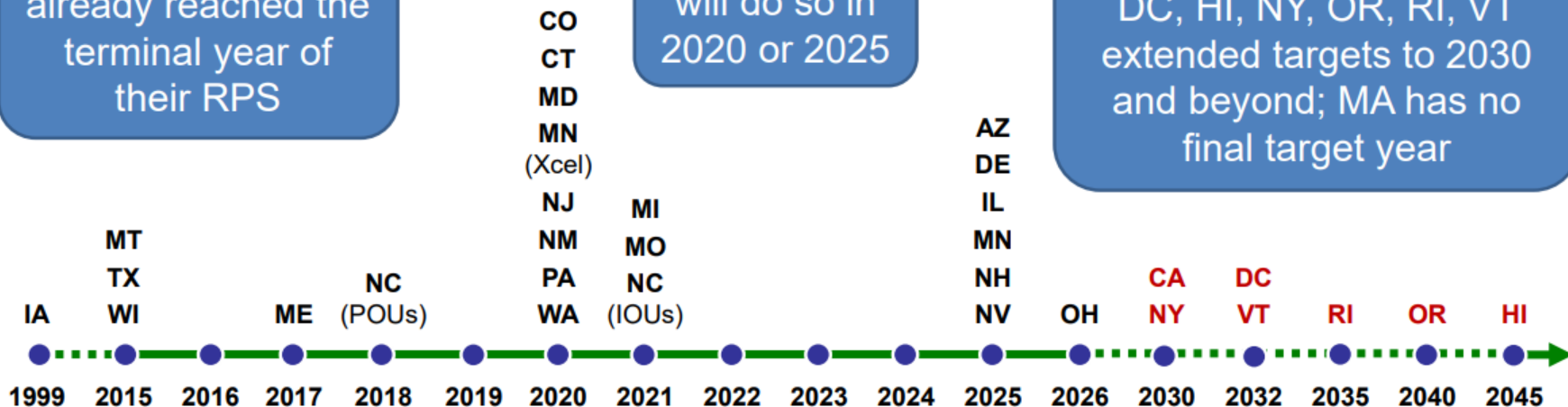
Half of all RPS states reach their final target year by 2021

Year of Final RPS Target

Several states have already reached the terminal year of their RPS

Most others will do so in 2020 or 2025

Recent revisions in CA, DC, HI, NY, OR, RI, VT extended targets to 2030 and beyond; MA has no final target year

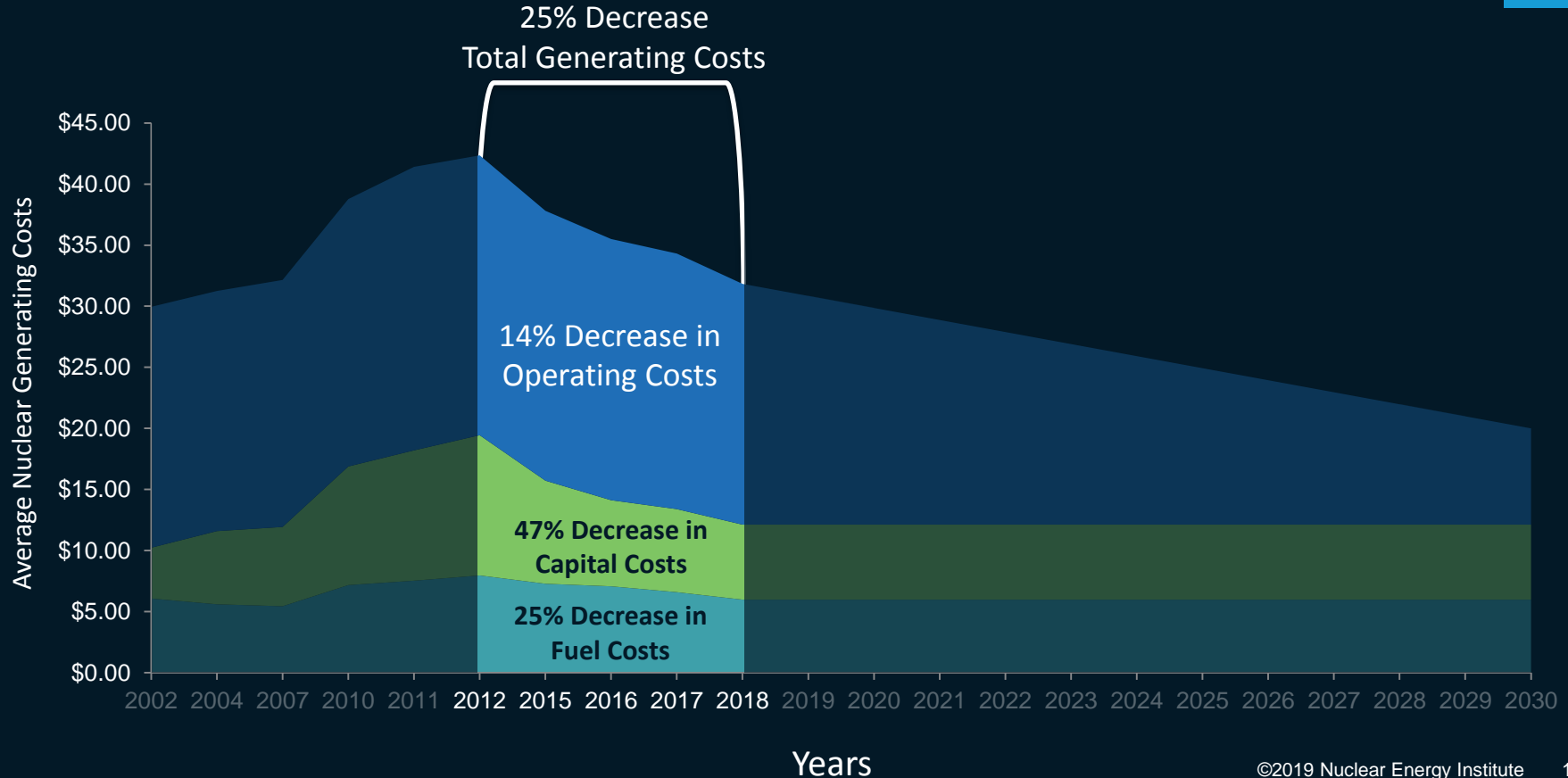


Source: Third Way

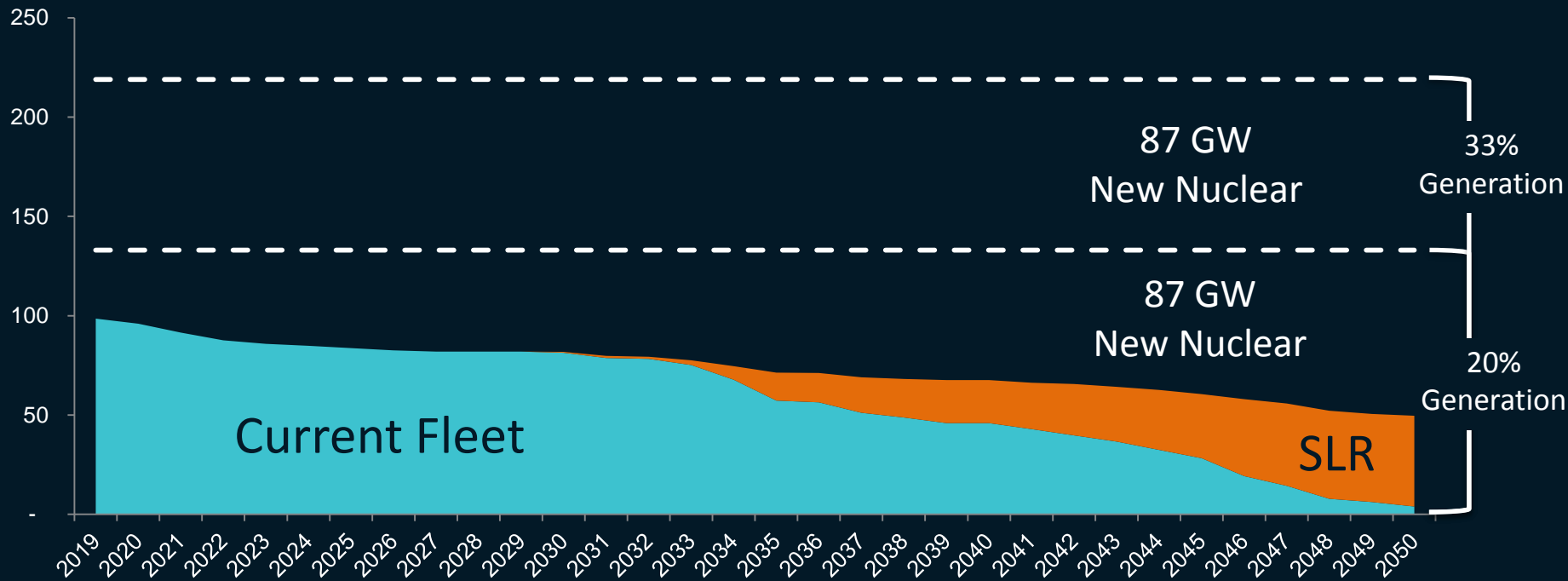
STATE SUPPORT FOR NEW PLANT DEVELOPMENT

- Georgia
 - New nuclear plant development; units operational 2021 and 2022
- Idaho
 - Measures to incentivize small reactor deployment at Idaho National Laboratory
- Utah
 - Legislation to advance SMR development

Operating Plant Costs Have Been Reduced



Nexus Between Existing and New



NEW TECHNOLOGY DEVELOPMENT

- Clinch River (TVA)
 - Early Site Permit approval expected Q1 2020
- NuScale
 - On track for design certification 01/2021
- Accident Tolerant Fuel
 - Two types loaded into the Hatch plant
- Micro-reactors
 - Dept. of Defense interest



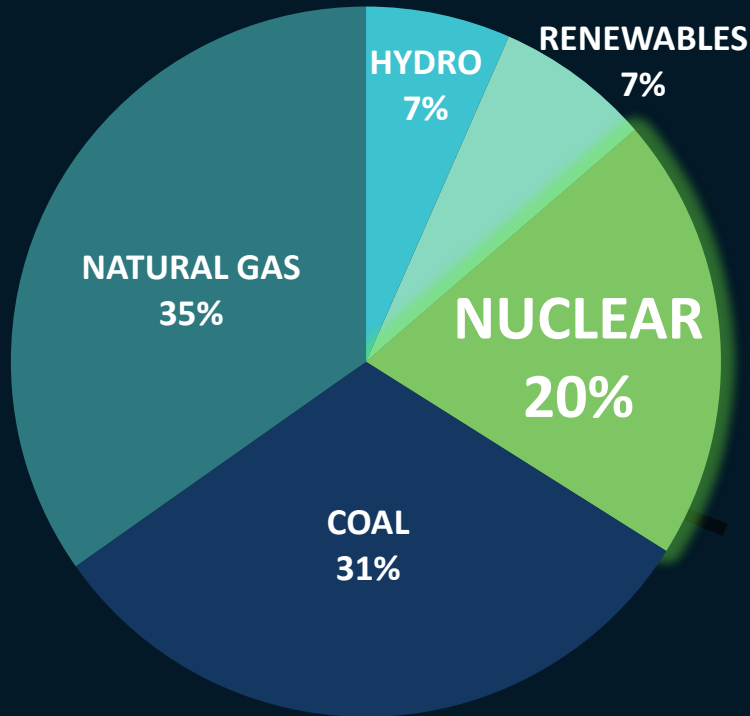
Federal Legislation

- 2019 Nuclear Energy Innovation and Modernization Act
- 2019 National Defense Authorization Act
- Appropriations
 - Reduction in NRC fees
 - Funding for R&D
- Introduction of nuclear-supportive bills
 - Nuclear Energy Leadership Act
 - Nuclear Energy Innovation Capabilities Act
 - Nuclear Utilization of Keynote Energy Act

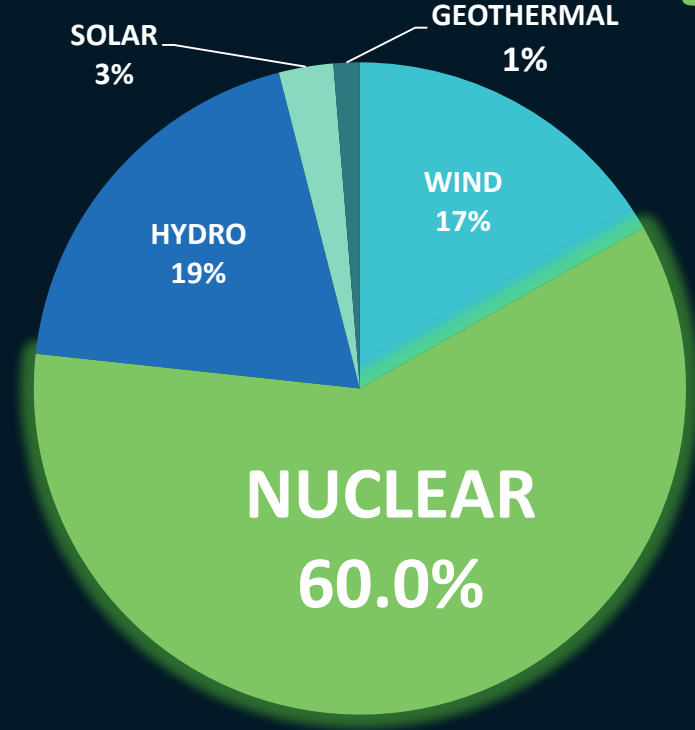


REDEFINE CLEAN ENERGY STANDARD

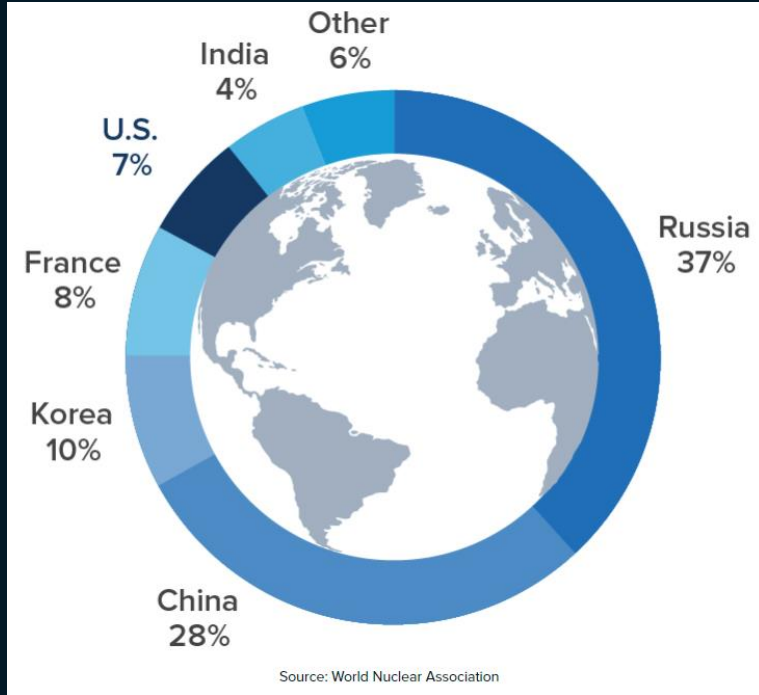
U.S. Electricity Generation



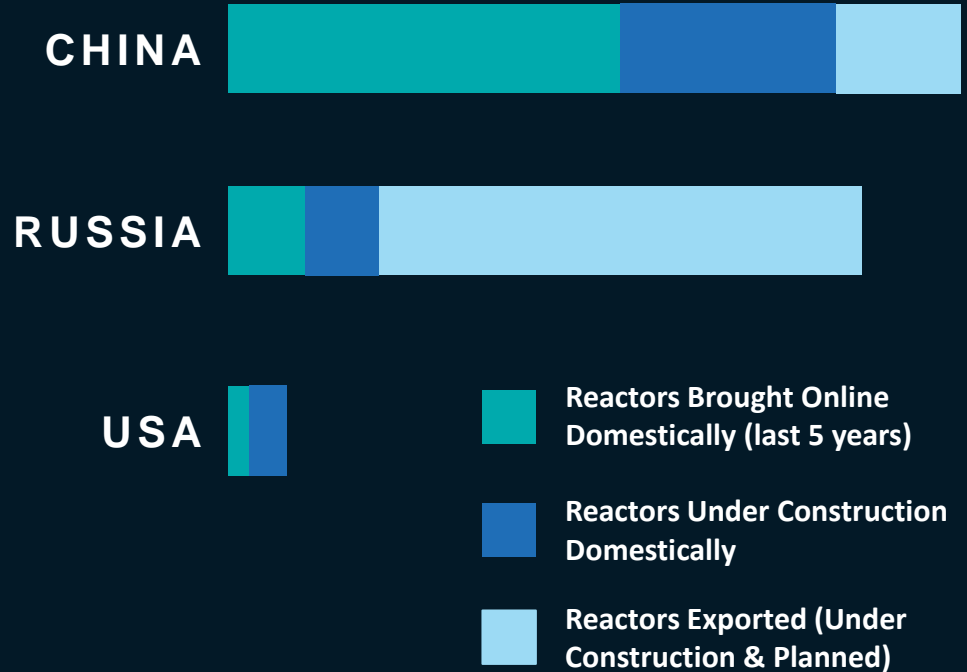
Contributions to Clean Energy



Global Construction



National Security Impacts



USED NUCLEAR FUEL SAGA

- Nuclear Waste Policy Act of 1982
- Nuclear Waste Policy Act Amendments of 1987
- DOE Issues Notice of Inquiry (1994)
- *Indiana Michigan Power Co. v. DOE*, 88 F.3d 1272 (D.C. Cir. 1996)
- *Northern States Power Co. v. DOE*, 128 F.3d 754 (D.C. Cir. 1997)
- *Maine Yankee Atomic Power Co. v. U.S.*, 225 F.3d 1336 (Fed. Cir. 2000)
- *Alabama Power Co. v. DOE*, 307 F.3d 1300 (11th Cir. 2002)
- Yucca Mountain Development Act of 2002
- *In re Aiken County*, 725 F.3d 255 (D.C. Cir. 2013)
- *NARUC v. DOE*, 736 F.3d 517 (D.C. Cir. 2013)
- *Texas v. U.S.*, 891 F.3d 553 (5th Cir. 2018)

Changing the Nuclear Narrative

- Clean air attribute
 - Green New Deal consensus
- National security
- Innovator/thought leader support
- Recognition of nuclear's value in national publications

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